Medical cannabis is associated with reduced prescription opioid receipt and pain in adults with chronic pain

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Disclosures

- I have no conflicts of interest to disclose
Background: Pain and Opioids

• Management of chronic pain is challenging
• For many years, opioid analgesics were a leading pain management strategy

Percent of Adults in the US with Chronic Pain

- 70%
- 20-30%

(Yong RJ, et al Pain 2022)
Background: Pain and Opioids

We need new strategies to address pain management and reduce use of opioids

(Figure 1-2) Number of overdose deaths from prescription and illicit opioids, United States, 1999–2015. SOURCE: NCHS, 2016.

(Bonnie RJ, et al. NASEM 2017)
Background: Access to medical cannabis is growing

Medical cannabis is legalized in 39 states
Background: Cannabis for pain

Cannabis improves pain in animal models (meta-analysis of 374 studies)  
(Soliman et al. *Pain* 2021)

Cannabis improves pain in humans  
(meta-analysis of 28 studies)  
(Whiting, et al. *JAMA* 2015)
Background- Medical cannabis and opioid analgesic use

Medical Marijuana Users are More Likely to Use Prescription Drugs Medically and Nonmedically

Theodore L. Caputi, BS and Keith Humphreys, PhD
(J Addict Med 2018)

(Bachhuber et al JAMA Int Med 2015)
Aims and Hypotheses

• Aim 1: To understand how medical cannabis use affects opioid analgesic receipt over time.
  • H1: Medical cannabis use will be associated with a reduction in opioid analgesic receipt over time.

• Aim 2: To understand how medical cannabis use affects pain over time.
  • H2: Medical cannabis use will be associated with a reduction in pain over time.
Methods: Recruitment & Eligibility Criteria

Recruitment
- Montefiore’s Medical Cannabis Program
- Local medical cannabis dispensaries
- Community medical cannabis providers

Eligibility Criteria

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>Exclusion</th>
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<tbody>
<tr>
<td>&gt;18 years old</td>
<td>Inability to provide informed consent or complete study visits</td>
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<tr>
<td>English speaking</td>
<td>Using medical cannabis for unique pain syndromes</td>
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<tr>
<td>New certification for medical cannabis in New York State for chronic pain (within 90 days)</td>
<td>Currently/planning on pregnancy or breastfeeding or chestfeeding</td>
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<tr>
<td>Use of prescribed or illicit opioid analgesics in the past 30-days</td>
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## Methods: Data sources and analyses

<table>
<thead>
<tr>
<th>Brief Web-Surveys Every 2-weeks</th>
<th>Full Study Visits Quarterly</th>
<th>New York State Prescription Monitoring Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days of medical cannabis use</td>
<td>Pain Severity: Brief Pain Inventory Scale</td>
<td>Current opioid prescription at the date of the web-Survey (dichotomous)</td>
</tr>
<tr>
<td>THC/CBD content of medical cannabis used</td>
<td>Pain Interference: Brief Pain Inventory Scale</td>
<td>Mean MME at the date of the web-survey (continuous)</td>
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<tr>
<td>Pain, Enjoyment of Life and General Activity [PEG] Scale</td>
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**Analyses**
- Descriptive statistics
- Repeated t-tests to assess change in PEG score, pain severity and pain interference
- Repeated Generalized Estimating Equation models to assess change in mean MME over time
Results: Demographics

Total sample: 225

Average age: 54 yrs (Standard Deviation: 13)

Female Gender
- 54% Female
- 46% Male

Race/Ethnicity
- 35% Non-Hispanic White
- 32% Non-Hispanic Black
- 26% Hispanic
- 7% Other

Not Employed
- 78% Not Employed
- 22% Employed

Public insurance only
- 79% Public insurance
- 21% Other insurance

Non-Hispanic White  Non-Hispanic Black  Hispanic  Other

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Results: Pain Characteristics

Baseline Mean MME: 65.3
(Standard deviation: 145.4)

Mean Pain Interference: 6.8
Mean Pain Severity: 6.6
Mean PEG Score: 7.1

Pain at multiple body sites: 79%
Daily prescription opioid use at baseline: 52%
Past 14-day unregulated cannabis use at baseline: 28%
Results: Medical cannabis use over time

Using Predominantly High-THC MC  |  Using Other MC  |  No Use

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Results: Pain over time

* Significant change from baseline
Results: Current opioid prescription and mean MME over time

- In repeated GEE analyses, there was a downward trend in mean MME over the 18-month study period ($\beta = -0.21$ [CI: -0.4 - -0.03], p=0.03)
- Participants with current opioid prescription dropped by 20% during the study period (50% → 40%)
Conclusions

Over 18-months, in a diverse sample of patients, the majority of whom accessed healthcare with public insurance:
• Pain interference, severity and PEG scores reduced
• Number of participants with current opioid prescription dropped by 20%
• There was a statistically significant downward trend in mean MME
Limitations

• Preliminary data
• Cohort studies cannot show us the full picture
• Secular trends of opioid prescribing have reduced over time
• Pain may have improved regardless of cannabis administration (no placebo), leading to reduction in opioid prescribing

(Guy GJ, et al MMWR 2017)
Future directions

The MEMO Study:
• Examine change in opioid use within and between subjects
• Repeat analyses with self-reported opioid data
• Examine the association between self-reported cannabinoid content and opioid use

Other studies:
• Foundation-funded RCT testing how coupons for different medical cannabis products (high THC vs 1:1 THC/CBD vs high CBD vs placebo) affect opioid analgesic use (NCT04308148)
Acknowledgements

Co-Authors/Collaborators:
• Chenshu Zhang, PhD
• Julia H. Arnsten, MD, MPH
• Chinazo O. Cunningham, MD, MS
• Joanna Starrels, MD, MS
• Yuting Deng, PhD
• Nancy Sohler, PhD, MPH
• Haruka Minami, PhD
• Frances Levin, MD
• Yuval Zolotov, PhD
• Stephen Dahmer, MD

Study team:
• Giovanna Calderon DiFrancesca
• Aida Issaka
• Rosina Antwi
• Melissa Compaore
• Greg Cortorreal
• Francisco Larios Aviles
• Hanna Schoenbaum

Funding: